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Black Cutworm Thresholds: What has Changed with the Price of Corn and New Control Methods?

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By Jon Tollefson and Marlin Rice, Department of Entomology

Black cutworm traps across Iowa have been capturing migrating moths for several weeks. Pheromone traps are valuable tools in integrated pest management, but they have limitations. The traps only tell you that the insects are in your area; they do not report in which fields the insects have laid their eggs.

Where moths lay their eggs will be influenced by environmental and agronomic factors such as weed cover, tillage, the date the crop is planted and previous crop residue, etc. The bottom line is that once adult black cutworms are forecast to be in your area, you must scout your fields to determine if there are larvae present and if they are "cutting" your corn plants. If there is sufficient cutting then controls should be applied.

To scout for black cutworm injury, walk along rows of corn at several locations in a field looking for feeding on corn leaves and missing plants. Small larvae will feed on the edges of leaves before they get large enough to cut corn plants.

Cutting may not happen for several days after the first leaf feeding is observed. If leaf feeding is observed, begin looking for missing (cut off) plants. Sort through soil near the surface in the area of missing plants while looking for cutworm larvae. If larvae can be found, determine whether they are black cutworms or dingy cutworms Dingy cutworms rarely, if ever, will cut corn plants. Record the number of missing plants and determine the percentage of the plants cut.

There are some new variables in the control of black cutworms. These include genetically engineered corn, higher seed prices and increased market prices of corn. First, with genetically engineered corn, remember that YieldGard® is not effective against the black cutworm; only Herculex® hybrids give some protection against black cutworm.

Second, with the high cost of seed and expected higher returns from corn the economic threshold could be lowered. Larvae ¾-inch long are in the 4th stage and will cut several more plants before they finish feeding. If the worms are longer than one inch, they are nearly finished feeding and treatments don't need to be applied until 5 percent of the plants have been cut. A lower threshold would be 1 percent stand loss, which would be within normal stand variability and very hard to detect. The previous economic thresholds was if cutworms were less than ¾-inch, apply an insecticide when 2 to 3 percent of the plants are cut.

The higher threshold of 5 percent for larger worms could be lowered. If we were to assume that a grower were planting 32,000 plants per acre with the expectation of producing 200 bushels of corn, then 160 plants would produce 1 bushel of corn. If corn is selling for $6.00 per bushel then each plant produces $0.0375 worth of corn (32,000 plants/acre divided by 200 bu/acre = 0.00625 bu of corn per plant; multiplied by $6.00/bu = $0.0375/plant).

If control costs are assumed to be $15.00/acre then 400 plants lost would equal the cost of control ($15.00/$0.0375 = 400 plants). The 400 plants out of 32,000/acre = 1.25 percent of an acre. The result is that losing 1 to 2 percent of the plants at $5.00-6.00 corn would cover the costs of control. The higher threshold of 5 percent for larger worms could be lowered to 1 to 2 percent plant loss. This new economic threshold is based on calculations using the previous threshold. The actual economic returns will depend on how much cutting the larvae continue to do and the percentage of the plants that fail to re-grow after being cut.

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